CLAIMS.

1. A method of treating a patient for a neuro-degenerative disorder comprising administering to that patient a therapeutically effective amount of one or more of D-β-hydroxybutyric acid, acetoacetate, or a metabolic precursor or physiologically acceptable salt of D-β-hydroxybutyric acid or acetoacetate, such as to elevate the patient's blood level of ketone bodies, defined as the sum total of D-β-hydroxybutyric acid and acetoacetate, to a therapeutic level effective to treat the disorder
wherein when a metabolic precursor is administered it is not hydroxybutyryl carnitine.

2. A method of treating a patient in order to treat a neuro-degenerative disorder comprising administering to that patient a therapeutically effective amount of at least one of D-β-hydroxybutyric acid, acetoacetate, or a metabolic precursor or physiologically acceptable salt of D-β-hydroxybutyric acid or acetoacetate, such as to elevate the patient's blood level of ketone bodies, defined as the sum total of D-β-hydroxybutyric acid and acetoacetate, to a therapeutic level effective to treat the disorder
wherein the patient's blood level is elevated to from 0.3mM to 20mM.

3. A method of treating a CNS cell, peripheral nerve cell, or otherwise insulin insensitive cell in need of therapy for one or more of neuro-degeneration, GABA preventable seizure, or insufficient ability to metabolise glucose, comprising administering to that cell one or more compounds selected from the group consisting of D-β-hydroxybutyric acid, acetoacetate, compounds which are oligomers of D-β-hydroxybutyric acid, acetoacetyl esters of D-β-hydroxybutyric acid and acetoacetyl esters of oligomers of D-β-hydroxybutyric acid, and physiologically acceptable salts thereof.

4. A method of treating an patient for epilepsy, diabetes or an insulin resistant state comprising administering to that patient a therapeutically effective amount of one or more compounds selected from the group consisting of D-β-hydroxybutyric acid, acetoacetate and metabolic precursors of D-β-hydroxybutyric acid or acetoacetate which comprise

moieties selected from the group consisting of R-1,3-butandiol, acetoacetyl and D-β-hydroxybutyryl moieties and physiologically acceptable salts and esters thereof.

5. A method as claimed in any one of Claim 1, Claim 2, Claim 3 and Claim 4 wherein on administration of the compound to an unfasted patient in need of such therapy, the blood level of ketone bodies, defined as the sum total of D-β-hydroxybutyric acid and acetoacetate, is raised to between 0.3 and 20mM.

6. A method as claimed in Claim 1 or Claim 2 wherein the neurodegenerative disorder is selected from the group consisting of neurodegenerative disorders involving inability to metabolise glucose, memory loss in ageing, neurotoxic peptides or proteins, and genetic abnormality.

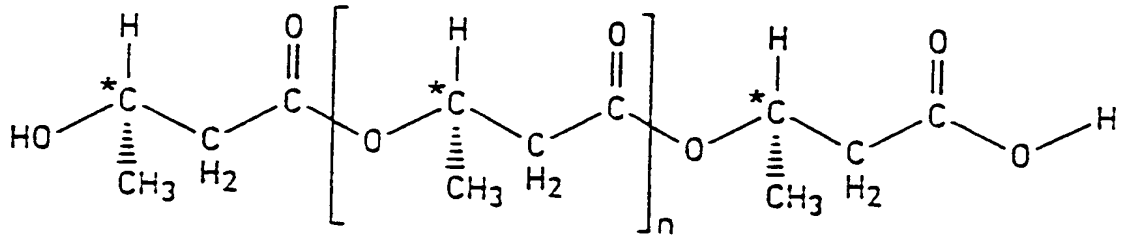
7. A method as claimed in Claim 6 wherein the neurodegenerative disorder is selected from those involving neurotoxic protein plaques.

8. A method as claimed in Claim 1 or Claim 2 wherein the metabolic precursor is selected from the group consisting of Free Fatty Acids and compounds comprising 1,3-butandiol, acetoacetyl or D-β-hydroxybutyryl moieties.

9. A method as claimed in Claim 1, Claim 2, Claim 3 or Claim 4 wherein the metabolic precursor is a polymer or oligomer of D-β-hydroxybutyrate.

10 A method as claimed in Claim 9 wherein the metabolic precursor is an acetoacetyl ester.

11. A method as claimed in Claim 9 wherein metabolic precursor is selected from the group consisting of compounds of general formulae



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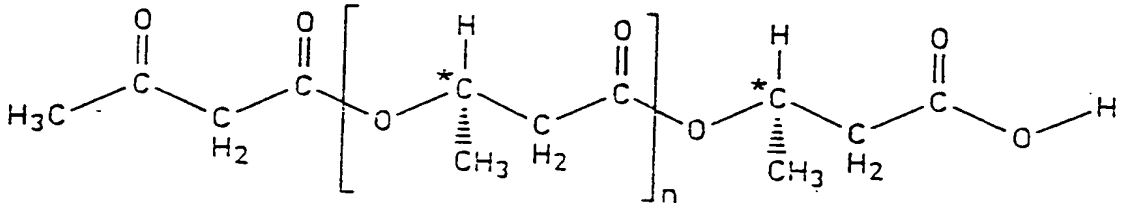


or physiologicial acceptable salts or esters thereof

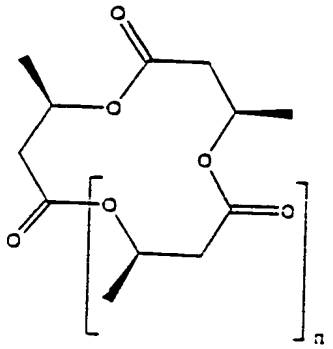
wherein in each case n is selected such that the polymer or oligomer is readily metabolised on administration to a human or animal body to provide elevated ketone body levels in blood

12. A method as claimed in Claim 11 wherein n is an integer of 0 to 1,000.

13. A method as claimed in Claim 11 wherein n is an integer of from 1 to 5.

14. A method as claimed in Claim 1, Claim 2, Claim 3 or Claim 4 wherein the level of ketone bodies produced in the blood is in the ratio 1:1 to 20:1 of D-β-hydroxybutyrate to acetoacetate.

15. A method as claimed in Claim 9 wherein the oligomer is a cyclic oligomer of formula



where n is an integer of 1 or more

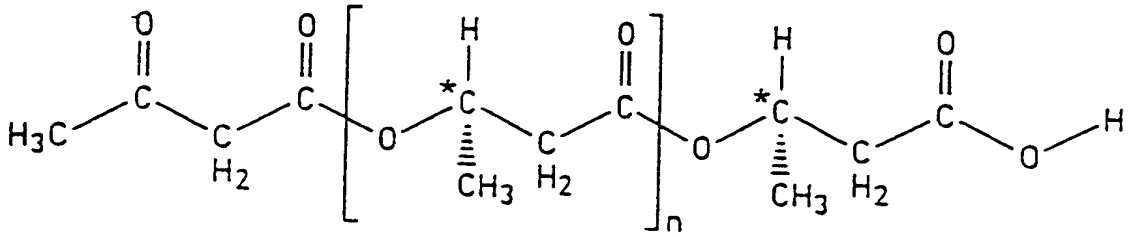
or a complex thereof with one or more cations or a salt thereof

16.. A method as claimed in Claim 15 wherein the one or more cations are selected from the group consisting of sodium. potassium, magnesium and calcium.

17. A method as claimed in Claim 15 wherein n is an integer from 1 to to 20.

18. A method as claimed in Claim 1 wherein it is (R, R, R)-4, 8, 12-trimethyl-1, 5, 9-trioxadodeca-2, 6, 10-trione.

19. A compound of formula



or physiologicial acceptable salts or esters thereof.

wherein n is an integer from 0 to 1000

20. A compound as defined in Claim 19 wherein the ester is selected from the group consisting of monohydric, dihydric or trihydric alcohol esters

21. A compound as claimed in Claim 19 wherein the ester is of (R)-1,3-butandiol.

22. A compound as claimed in Claim 19 wherein n is selected from the group of integers 0, 1, 2, 3 and 4.

23. A foodstuff comprising poly D-β-hydroxybutyrate characterised in that it is derived from a foodstuff generating organism that has had a gene capable of producing D-β-hydroxybutyrate inserted therein.

24. A foodstuff charactersied in that it comprises at least 5% ketone bodies by weight.

25. A method for the synthesis of D-β-hydroxybutyryl-acetoacetate or poly or oligo-D-β-hydroxybutyryl-acetoacetate esters comprising the reaction of acetoacetic acid halide with D-β-hydroxybutyrate or poly- or oligo-D-β-hydroxybutyrate.

26. A method for synthesis of D-β-hydroxybutyryl-acetoacetate or oligo-D-β-hydroxybutyryl-acetoacetate comprising reacting D-β-hydroxybutyryic acid with diketene.

27. A method of synthesising an oligomer of D-β-hydroxybutyric acid comprising heating a solution of D-β-hydroxybutyric acid in a solvent until an oligomer of a desired number of repeats is produced.

28. Use of D-β-hydroxybutyric acid, acetoacetate, or a metabolic precursor or physiologically acceptable salt of D-β-hydroxybutyric acid or acetoacetate for the manufacture of a medicament for the treatment of a disorder by a method as set out in any one of Claims 1 to 14 provided that when the use is of a metabolic precursor that is not racemic

hydroxybutyryl carnitine.

29. A foodstuff as claimed in Claim 23 or Claim 24 for use in therapy.

30. Poly-D-β-hydroxybutyrate for use in therapy

31. A composition comprising a compound selected from those claimed in any one of Claims 15 to 18 and poly D-β-hydroxybutyrate together with a physiologically acceptable carrier, in sterile and pyrogen free form.